

# A CROSS SECTIONAL INVESTIGATION ON THE HEALTH STATUS IN A POPULATION EXPOSED TO 50Hz MAGNETIC FIELDS IN A DISTRICT OF ROME: HEMATOLOGICAL AND IMMUNOLOGICAL PARAMETERS

**Caterina Bruno** *Department of Environment and Primary Prevention, National Institute of Health, Rome , Italy*

**Nicola Vanacore** *National Centre for Epidemiology, Surveillance, and Health Promotion, National Institute of Health, Rome , Italy*

**Ilaria Del Giudice** *Department of Cellular Biotechnologies and Hematology, Division of Hematology, "Sapienza" University, Rome, Italy*

**Stefano Belli** *Department of Environment and Primary Prevention, National Institute of Health, Rome , Italy*

**Rosalba Masciulli** *Prevention and Health Protection Service, National Institute of Health, Rome , Italy*

**Daniela Ferrari** *Prevention and Health Protection Service, National Institute of Health, Rome , Italy*

**Roberta Pacifici** *Department of Therapeutic Research and Medicine Evaluation, National Institute of Health, Rome , Italy, Rome, Italy*

**Pietro Comba** *Department of Environment and Primary Prevention, National Institute of Health, Rome , Italy*

**Robin Foà** *Department of Cellular Biotechnologies and Hematology, Division of Hematology, "Sapienza" University, Rome, Italy*

**Background and Aims:** Extremely Low Frequency Magnetic fields are possible carcinogens and the question whether they cause biological effects is of special interests.

**Aim** of the study is to evaluate hematological and immunological parameters in the resident population of a district of Rome built in part under a 60 kV electric distribution line. In the same area two mortality and morbidity studies were previously performed.

**Methods:** Residential magnetic field levels based on current load, line characteristics and distance of the dwellings from the power line were estimated, and the study area was divided into sub-areas with differing magnetic field levels. Subjects living close to the line were contrasted with those resident in the more distant dwellings.

252 subjects had blood sample taken to investigate hematological parameters, including lymphocyte subsets. Lymphoproliferative response to mitogens and cytolytic activity of natural killer (NK) cells were tested.

A detailed questionnaire collected information on possible confounders.

**Results:** Preliminary results showed in "exposed" vs "unexposed" subjects:

- a) increased platelet count and plateletocrit, and reduced basophilic granulocytes
- b) reduced percentage of total CD3 $\pm$  T lymphocytes
- c) reduced percentage of CD4 $\pm$  (helper inducer) T lymphocytes
- d) reduction of CD4/CD8 ratio
- e) increased percentage of NK cells
- f) increased percentage of CD19 lymphocytes

**Conclusions:** Preliminary results showed some abnormalities in the hematological and immunological parameters of the exposed group which deserve further investigation.

## References

Fazzo L, Grignoli M, Iavarone I, Polichetti A, De Santis M, Fano V, Forastiere F, Palange S, Pasetto R, Vanacore N, Comba P. Epidemiol Prev. 2005 Sep-Dec;29(5-6):243-52.[Article in Italian]

Fazzo L, Tancioni V, Polichetti A, Iavarone I, Vanacore N, Papini P, Farchi S, Bruno C, Pasetto R, Borgia P, Comba P. Morbidity experience in population residentially exposed to 50 Hz magnetic fields: methodology and preliminary findings of a cohort study J Occup Environ Health 2009;15(2):133-42.